Bubbles and Soap Film Experiments

While free-floating bubbles are spherical, soap films can take on many different shapes. It all depends on the bubble wand.

What you will need:

- Pipe cleaners (chenille sticks)
- Dish soap (Dawn or Joy works best)
- Plastic tub deep enough to submerge your wands
- Water
- Optional additives to soap solution:
  – Baking powder
  – Guar gum
  – Glycerin
- Optional items to blow bubbles through:
  – Individual serving size yogurt tubs and/or
  thin plastic drinking water bottles, with ends cut off
  – Plastic hair curlers

Caution: Prepare to get wet and soapy. Surrounding areas will be slippery!

Here's what to do:

To make your soap solution you can experiment with the soap type or concentration.
A typical mixture uses a dilution of about two tablespoons of soap per cup of water, or for a larger tub, use 1 part of dish soap to 3½ – 4 parts of water. After you've got your favorite concentration of soap and water working, as an additional experiment, you may want to try

adding very small amounts of baking powder, guar gum, or glycerin (start with less than a teaspoon).

To make soap film wands, experiment with pipe cleaners to create a variety of shapes. For simple bubble blowing, you can make flat, 2-D shapes on the end of the pipe cleaner, to blow bubbles through. Twist or braid a few pipe cleaners together to increase their strength when you dip them in the soap solution.

- Does the shape of the wand make a difference in the shape of the bubble formed? What happens when you try blowing through a tube, such as one of the optional items above? Does the length or width of the tube matter? What else could you blow bubbles through?
- What do you notice about the colors and the patterns of the bubbles or the soap films on the wands?
- Do they change over time?

Take it further:

You can also experiment with bending the pipe cleaners into three-dimensional shapes. To help form your shape, you can bend the pipe cleaner around a small tube or box. How many different shapes can you make?

Pipe cleaners make good bubbles because they hold a lot of liquid, but they drip a lot! You can try other materials for your bubble wands such as plastic or metal wires, canned beverage six-pack rings, yogurt lids cut into spirals and more! Explore this website for more ideas on geometrical wands.

- What do you notice about about the shape of the wand, and the shapes formed by the soap films?
- Do the films rearrange into a new shape if you pop some of the sides?